

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 11, 14, 15 and 18 are pending in the application. Claims 11 and 15 are amended by the present amendment. Support for amended independent Claims 11 and 15 can be found in the original specification, claims and drawings.¹ No new matter is presented.

In the outstanding Official Action, Claims 11, 15 and 18 were rejected under 35 U.S.C. § 102(a) as anticipated by the background description of the specification (hereinafter Background); and Claim 14 was rejected under 35 U.S.C. § 103(a) as unpatentable over Background in view of U.S. Patent No. 6,571,366 to Doetsch et al. (hereinafter Doetsch).

In response to the rejections noted above, Applicant respectfully submits that amended independent Claims 11 and 15 recite novel features clearly not taught or rendered obvious by the applied references.

Amended independent Claim 11 relates to a turbo decoder operative to use a soft output Viterbi algorithm (SOVA). The turbo decoder includes a first decoding unit and a second decoding unit, wherein an output of the first decoding unit is connected to an input of the second decoding unit and an output of the second decoding unit is connected to an input of the first decoding unit. A normalization unit is also included in the decoder, and an output of the normalization unit is connected to the output of the first decoding unit. Claim 11 is further amended to recite that

a number of normalization units included in the turbo decoder is smaller than a number of decoding units included in the turbo decoder.

¹ e.g., specification, Fig. 2 and p. 6, lines 5-12.

Independent Claim 15, while directed to an alternative embodiment, is amended to recite substantially similar features. Accordingly, the remarks presented below are applicable to each of independent Claims 11 and 15.

As disclosed in an exemplary embodiment at Fig. 2 and p. 6, lines 5-12, the output of a first decoder (25) is connected to the only normalization unit (27) of the turbo decoder (e.g., no normalization unit is attached to the second decoder). As noted at p. 7, lines 23-34, normalizing only a subset of the SOVA decoders yields very good performance while reducing the computational complexity of the decoder.

In rejecting independent Claims 11 and 15, the Official Action relies on Fig. 3 and p. 2, lines 7-14 of the specification. In this Background portion of the specification, a turbo decoder is described, which includes a first normalization unit (27) connected to an output of a first decoder (25) and a second normalization unit (33) connected to an output of a second decoder (30). Thus, the Background describes a configuration in which a normalization unit is provided for each decoding unit resulting in equal numbers of decoding units and normalization units in the turbo decoder. This configuration is in clear contrast to amended independent Claim 11, which recites that “***a number of normalization units included in the turbo decoder is smaller than a number of decoding units included in the turbo decoder.***”

Further, as described at p. 2, lines 23-25, providing a normalization unit at every decoding unit adds extra complexity, which increases with frame size, to the turbo decoder. As discussed above, the claimed embodiment reduces complexity while achieving good performance by associating a normalization unit with only a subset of the decoding units. The Background fails to teach or suggest this claimed configuration.

Accordingly, Applicant respectfully requests that the rejection of Claims 11 and 15 under 35 U.S.C. § 102 be withdrawn.

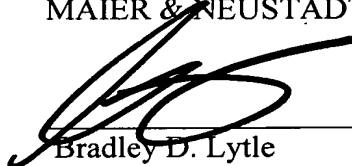
With regard to the rejection of Claim 14 under 35 U.S.C. § 103(a) as unpatentable over Background in view of Doetsch, it is noted that Claim 14 depends from Claim 11, and is believed to be patentable for at least the reasons discussed above. Further, it is respectfully submitted that Doetsch does not cure any of the above-noted deficiencies of Background.

Accordingly, Applicant respectfully requests that the rejection of Claim 14 under 35 U.S.C. § 103 be withdrawn.

Consequently, in view of the present amendment and in view of the foregoing comments it is respectfully submitted that the invention defined by Claims 11, 14, 15 and 18 is patentably distinguishing over the applied references. The present application is therefore believed to be in condition for formal allowance and an early and favorable reconsideration of the application is therefore requested.

Respectfully submitted,

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